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| APPLICATION NO.                       | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
|---------------------------------------|-------------|----------------------|---------------------|------------------|
| 10/800,471                            | 03/15/2004  | Warren M. Ewert      | 33890US1            | 3183             |
| 7590 11/05/2007                       |             |                      |                     |                  |
| K. KaRan Reed                         |             | EXAMINER             |                     |                  |
| Chevron Phillips Chemical Company, LP |             | MCAVOY, ELLEN M      |                     |                  |
| Law Dept-IP                           |             | ART UNIT             |                     |                  |
| PO Box 4910                           |             | PAPER NUMBER         |                     |                  |
| The Woodlands, TX 77387               |             | 1797                 |                     |                  |
|                                       |             | MAIL DATE            |                     |                  |
|                                       |             | DELIVERY MODE        |                     |                  |
|                                       |             | 11/05/2007           |                     |                  |
|                                       |             | PAPER                |                     |                  |

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

## Office Action Summary

Application No.

10/800,471

Applicant(s)

EWERT ET AL.

Examiner

Ellen M. McAvoy

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 27 August 2007.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1,3-6,10-18,20-31,35-37,39 and 41-65 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1,3-6,10-18,20-31,35-37,39 and 41-65 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
  - ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |   |   |
|---|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)                    | 4) <input type="checkbox"/> Interview Summary (PTO-413)           |
| 2) <input type="checkbox"/> Notice of Draftperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____                                      |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)         | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____   | 6) <input type="checkbox"/> Other: _____                          |

***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1, 3-6, 10-18, 20-31, 35-37, 39 and 41-65 are rejected under 35 U.S.C. 103(a) as being unpatentable over Lashier et al (5,689,028), Araki et al (5,750,816) and Kreischer et al (6,380,451), considered separately.

Applicants' arguments filed 27 August 2007 have been fully considered but they are not persuasive. As previously set forth, Lashier et al ["Lashier"] disclose a process to regulate olefin production by deactivating the catalyst system which comprises the sequential steps of contacting a reactor effluent stream with an alcohol, removing and recovering any desired olefin product(s), adding an aqueous base to the reactor stream effluent, removing a solid product from the reactor stream effluent, separating organic and aqueous phases, adding an acid to the aqueous phase and recovering the precipitate. Lashier teaches that catalyst systems useful in the invention comprises a chromium source, a pyrrole-containing compound and a metal alkyl such as an aluminum alkyl. See column 1. Lashier teaches that the chromium source includes one or more organic or inorganic compounds including halogen-containing compounds. See column 1, line 55 to column 2, line 34. Lashier teaches that the pyrrole-containing compound can be any pyrrole-containing compound that will react with a chromium source to form a chromium pyrrolide complex. See column 2, line 35 to column 3, line 13. Lashier teaches that the

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alkylaluminum compounds may also be halogenated. See column 3. Reactants and reaction conditions are set forth in columns 4-5. Lashier teaches that suitable alcohol compounds have six or more carbon atoms and include 1-hexanol, 2-ethyl-hexanol, 1-heptanol, 1-octanol, and others. See column 6. The examiner maintains the position that the process of Lashier appears to be indistinguishable from the claimed processes.

Applicants argue that:

“...the Office Action has not established a *prima facie* case of obviousness because Lasher, Araki, or Kreischer do not teach or suggest, either singly or in combination, each and every limitation of independent claims 1, 18, 37, and 57. Specifically, each independent claim recites that ‘the separation comprises a distillation comprising a reboiler and material passed through the reboiler is maintained below about 190°C.’ Lashier, Araki, and/or Kreischer, do not teach or suggest that ‘the material passed through the reboiler is maintained below about 190°C.’ Consequently, independent claims 1, 18, 37 and 57 are allowable over the cited references.”

This is not deemed to be persuasive because Lashier discloses essentially the same step that has been added to the independent claims. Lashier discloses that after the catalyst system has been used to prepare one or more olefin product(s), the reactor effluent stream comprising olefin product(s), catalyst system, and some polymer and/or oligomer (i.e., heavies), is contacted with an alcohol. Lashier teaches that after the catalyst has been deactivated, the olefin product(s) are removed from the reactor effluent stream. Lashier teaches that any removal process can be used although distillation is preferred for ease of use. See column 5, lines 53-65 and column 6, lines 22-26. Although Lashier does not set forth a reboiler distillation temperature of below about 190°C, Lashier teaches that any reaction conditions which can affect the above-mentioned steps can be used. See column 7, lines 16-20. Thus the examiner is of the position that the

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method set forth in Lashier clearly includes newly added step (b) of the claims. The examiner is also of the position that the temperature of separation into at least one product stream containing the olefin oligomerization product and at least one heavies stream in the method of Lashier is expected to be the same or similar to applicants' claimed temperature since the product streams are seen to be the same or similar.

As previously set forth, Araki et al ["Araki"] discloses a process for preparing alpha-olefin oligomers using a chromium-based catalyst system comprising (a) a chromium compound, (b) at least one nitrogen-containing compound, and (c) an alkylaluminum compound. Araki teaches that the process recovers the produced alpha-olefin oligomers, the catalyst components and the by-product polymers from the reaction solution. The prior art teaches that suitable chromium compounds are set forth in column 2, lines 42 et. seq. Suitable nitrogen-containing compounds include pyrrole and pyrrolide compounds as set forth in column 4. Araki teaches that the alkylaluminum compounds may be halogenated. See column 6. Araki teaches that the oligomerization process is carried out in a solvent and a compound soluble in the solvent and having a bonding ability to the chromium such as an alcohol compound is added to the reaction solution. Suitable alcohols include hexanol, heptanol, and diols. See column 12. Reaction conditions are set forth in columns 8-9. The examiner is of the position that the process of Araki appears indistinguishable from the claimed processes.

Applicants argue that:

"...the Office Action has not established a *prima facie* case of obviousness because Lasher, Araki, or Kreischer do not teach or suggest, either singly or in combination, each and every limitation of independent claims 1, 18, 37, and 57. Specifically, each independent claim recites that 'the separation comprises a distillation comprising a reboiler and material passed through the reboiler is maintained below about 190°C.' Lasher, Araki, and/or Kreischer, do not teach or suggest that 'the material passed through the reboiler is maintained below about 190°C.' Consequently, independent claims 1, 18, 37 and 57 are allowable over the cited references."

This is not deemed to be persuasive because Araki discloses essentially the same step that has been added to the independent claims. Araki discloses that after the catalyst system has been used to prepare one or more olefin product(s), the reactor effluent stream comprising  $\alpha$ -olefin oligomers, catalyst components, and by-product polymers (i.e., heavies), is recovered. Araki teaches that the reaction effluent stream may then be supplied into a product distillation tower to recover the produced alpha-olefin oligomers as a distillate while concentrating the by-product polymers (i.e., heavies) and catalyst components which are recovered as a bottoms product. See column 2, lines 5-25 and column 9, lines 12-24. Although Araki does not set forth a reboiler distillation temperature of below about 190°C, Araki teaches that any reaction conditions which can affect the above-mentioned steps can be used. See columns 9-14. Thus the examiner is of the position that the method set forth in Araki clearly includes newly added step (b) of the claims. The examiner is also of the position that the temperature of separation into at least one product stream containing the olefin oligomerization product and at least one heavies stream in the method of Araki is expected to be the same or similar to applicants' claimed temperature since the product streams are seen to be the same or similar.

As previously set forth, Kreischer et al ["Kreischer"] discloses a process of cleaning an oligomerization reactor after making a higher olefin in the reactor. The oligomerization reaction causes a co-product residue of the catalyst to form on the interior surface of the reactor. Suitable catalyst systems used in such a reaction include the combination of a chromium source, a pyrrole-containing compound and one or metal alkyls such as aluminum alkyl compounds. The interior surface of the reactor is then contacted with an alcohol under conditions effective to remove at least a substantial amount of the catalyst residue from the interior surface of the reactor. Kreischer teaches that the catalyst-removing step can be carried out by combining an alcohol with the process medium used in the reactor. Kreischer set forth reaction conditions in columns 7-9. Suitable alcohols have 6-12 carbon atoms and include 1-hexanol and 1-heptanol.

The examiner is of the position that the process of Kreischer appears to be indistinguishable from the claimed processes.

Applicants argue that:

"...the Office Action has not established a *prima facie* case of obviousness because Lasher, Araki, or Kreischer do not teach or suggest, either singly or in combination, each and every limitation of independent claims 1, 18, 37, and 57. Specifically, each independent claim recites that 'the separation comprises a distillation comprising a reboiler and material passed through the reboiler is maintained below about 190°C.' Lashier, Araki, and/or Kreischer, do not teach or suggest that 'the material passed through the reboiler is maintained below about 190°C.' Consequently, independent claims 1, 18, 37 and 57 are allowable over the cited references."

This is not deemed to be persuasive because Kreischer discloses essentially the same step that has been added to the independent claims. Kreischer discloses that after the catalyst system has been used to prepare one or more olefin product(s), the reactor effluent stream comprising olefin

trimer products, catalyst system, and some polymer or higher oligomer co-products (i.e., heavies), can be contacted with an alcohol to "kill" or deactivate the catalyst system. Kreischer teaches that after the catalyst has been deactivated, the olefin product(s) are removed from the reactor effluent stream. Kreischer teaches that any removal process can be used although distillation is preferred for ease of use. See column 9, lines 63 to column 10, line 14. Although Kreischer does not set forth a reboiler distillation temperature of below about 190°C, Kreischer teaches that any reaction conditions which can affect the above-mentioned steps can be used. See columns 10-11. Thus the examiner is of the position that the method set forth in Kreischer clearly includes newly added step (b) of the claims. The examiner is also of the position that the temperature of separation into at least one product stream containing the olefin oligomerization product and at least one heavies stream in the method of Kreischer is expected to be the same or similar to applicants' claimed temperature since the product streams are seen to be the same or similar.

**THIS ACTION IS MADE FINAL.** Applicants are reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37



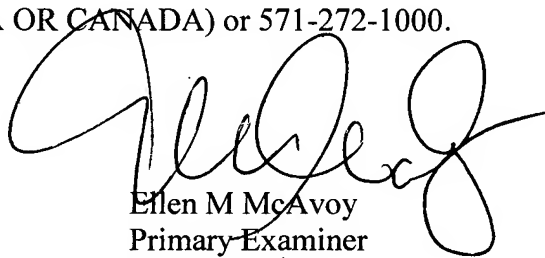
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CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Ellen M. McAvoy whose telephone number is (571) 272-1451. The examiner can normally be reached on M-F (7:30-5:00) with alt. Fridays off.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Glenn Caldarola can be reached on (571) 272-1444. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.



Ellen M McAvoy  
Primary Examiner  
Art Unit 1797

EMcAvoy  
October 31, 2007